AMENDMENTS TO THE SPECIFICATION

1. Replacement paragraph for paragraph at page 18, lines 1-3:

Figs. 25(a) and 25(b) illustrate the level of noise associated with an EEG signal both with and without a phase modulation tone, Fig. 25(a) ~~shown~~showing no modulation while Fig. 25(b) illustrates the effect of the use of a phase modulation tone.

2. Replacement paragraph for paragraph at page 18, lines 4-5:

Fig. 26 is a graph of a zero order bessel function ~~shown~~showing amplitude as a function of differential phase deviation.

3. Replacement paragraph for paragraph at page 19, lines 3-8:

Although preferred embodiments of the invention ~~has~~have been herein described, it is understood that various changes and modifications in the illustrated and described structure can be affected without departure from the basic principles that underlie the invention. Changes and modifications of this type are therefore deemed to be circumscribed by the spirit and scope of the invention, except as the same may be necessarily modified by the appended claims or reasonable equivalents thereof.

4. Replacement paragraph for paragraph at page 22, lines 3-11:

Because many bio-potentials have multiple inputs, e.g., the brain waves on the surface of the brain as recorded in an electroencephalogram (EEG), the present invention provides for the use of multiple high-impedance optical electrodes. To this end and as shown in phantom in Fig. 1, the present invention features an optical splitter 21 that is used to split light 22 from the light source 20 into two ~~one~~ or more additional light portions 24 and provide them to modulators 30' and associated detectors 40'. In addition to providing light 22 for additional modulators 30' and detectors 40', splitter 21 can also provide a light portion 26 which is used when it is desirable to provide an optical reference signal to the electronic circuitry 60.

5. Replacement paragraph for paragraph at page 33, line 20 to page 34, line 6:

As seen in Fig. 10, the use of an X;Y splitter 92 provides a reference signal 26. As will be discussed below, reference signal 26 is sent to a reference photodetector 40r (Fig. 11) ~~where it is used power provided to the electro-optic modulator 30~~. Optical splitter 21 is comprised of an N–splitter 94 and a X:Y splitter 92 for each channel provided by the N-splitter 94. The N-splitter 94 divides the power of the unmodulated light 22 into the requisite number of light fibers 23. N-splitter 94 sends light 23 along optic PM fiber 91 which is then attached to X:Y splitter 92. The X:Y splitter 92 divides light 23 and sends light 24 along PM fiber 132 to an electro-optic modulator 30 while the other PM fiber 130 sends light 26 directly to reference photodetector 40r.